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INTELLIGENCE MEMORANDUM NO. 170

SUBJECT: Munitions Production at the Skoda Works in Czechoslovakia*

1. Current Skoda Production (See also Appendix A.)

Current munitions production of the Skoda Works is confined to the following principal types: (a) tanks and armored vehicles; (b) artillery and mortars; and (c) artillery ammunition and explosive devices.

No quantity production of new tanks and armored vehicles, and only very limited production of new artillery and mortars have been undertaken by the Skoda Works since the end of World War II. The principal activity in these types of production has been the repair and modernization of existing tanks, vehicles, and guns;

Note: This report has not been coordinated with the intelligence organizations of the Departments of State, Army, Navy, and the Air Force. Appendix A and B were prepared by the Intelligence Division, General Staff, US Army.

* Skoda Works, as such, no longer exists as a combine in Czechoslovakia. As a result of nationalization, which was followed by a series of reorganizations in the Ministry of Industry, the various subsidiaries of large concerns, such as Skoda, were placed under appropriate branches of the Ministry of Industry for administration and operation.

In considering Skoda Munitions production, it should be borne in mind that Skoda represents only a segment (approximately one-third) of the total munitions production industry in Czechoslovakia. However, the statements and estimates pertaining to the dependence of Skoda on Swedish iron apply equally to the remainder of the Czech munitions industry.

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and development and testing of new weapons. Current new production consists principally of 210 mm guns for the Soviet Army at a reported continuing rate of 20 guns every six months. The reported 1949 program, however, calls for the production of 1250 artillery pieces of 75, 105, 152, and 210 mm caliber.

Ammunition production by the Skoda Works in the 12 months ending in February 1949 totalled 582,000 rounds varying from 37 to 300 mm caliber. Orders on hand from the Czech Army indicate that ammunition production is steadily increasing. Skoda is also engaged in developing new type land mines and hand grenades.

2. Capacity and Production Limitations (See also Appendix B.)

Skoda's munitions production program for 1949 is not notably above its normal peacetime level. Since World War II and up to the present time, Skoda's estimated annual wartime capacity of 840 large-caliber tank guns and 2,400 various artillery pieces has been utilized to only a very minor degree. Even the program for 1949, which calls for production of 1,250 artillery pieces, will utilize little more than one-third of wartime capacity.

Most recent information on the Skoda concern indicates that a speed-up in the reestablishment and reconstruction of armaments facilities has been ordered. In view of the present heavy-industry commitments of the company, it is felt that unless the international situation compels complete conversion to war production, it will not be possible to restrict to any further degree present non-military production.

Principal factors limiting production of munitions at the present time are: (a) Soviet demands on Skoda for heavy industrial production; (b) shortage of certain types of materials; (c) some dislocation of the industry resulting from transfer between plants of armaments manufacturing equipment; and (d) inability of Czech planners to make a final decision on the types to be manufactured.

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Shortages of iron and steel do not appear to have impeded arms production to any serious extent up to the present time, as steel apparently can be diverted from industrial production under the priority now given to the defense industry. In the forthcoming expansion of artillery production, it is expected that shortages of high-grade steel will become increasingly serious.

3. Dependence of Skoda on Swedish Iron (See also Appendix C.)

Czechoslovakia imports a large amount of high-grade Swedish iron ore which is blended with the low-grade Czech ore. The Skoda munitions plants use an insignificant amount of the raw Swedish ore; most of this ore is first processed at Czech steel mills and reaches the Skoda Works in the various forms of semi-finished or cast products. All semi-finished and cast products contain approximately 50 percent of metal originating from Swedish iron ore. Thus, Skoda munitions plants are dependent indirectly upon the imports of Swedish iron ore and production of these plants would be seriously curtailed if Swedish iron ore shipments to Czechoslovakia were stopped. Furthermore, if the supply of Swedish ore were cut off, production of Czech heavy industry would come to almost a standstill. If operations were to be resumed, radical changes would have to be made in blast furnace equipment, and such a change-over would take an estimated two years.

4. Dependence of Swedish Iron Industry on Polish Coal (See also Appendix D.)

The Swedish iron industry is now dependent on Polish coal and coke to only a minor degree. Metallurgical coke is essential to the Swedish iron and steel industry. Although Sweden is importing some metallurgical coke from Poland, her requirements could be met from other sources. Most Swedish steel production utilizes electrically-fired furnaces, and the electricity is derived principally from waterpower. Thus, while the Czech munitions industry would be crippled seriously without Swedish iron ore, the iron industry of Sweden would not be curtailed notably by the loss of Polish coal and coke.

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APPENDIX A

SKODA PRODUCTION

Current munitions production of the Skoda concern is confined to the following principal types: (a) tanks and armored vehicles; (b) artillery and mortars; and (c) artillery ammunition and explosive devices. A detailed description of each type of production is presented below:

a. Tanks and Armored Vehicles:

The Skoda Works has not undertaken quantity production of any new tanks or armored vehicles since the end of World War II. The limited activities of the Skoda concern in this field appear to be confined to the Pilsen plant. Current production in the armored vehicle field consists of repair or modification of German and Soviet tanks and the assembly of tank destroyers and half tracks using parts accumulated during the war and taken from derelict vehicles left in Czechoslovakia by the Germans. Currently the plant is developing plans for a new Czech medium tank in cooperation with Ceskomoravska Kolben Danek. The following projects are reported underway:

(1) Panzerjaeger Geraet 13 (German Tank Destroyers, equipped with 75 mm guns): 150 or more of these weapons, which were one of Skoda's principal wartime products, have been shipped to Switzerland for the Swiss Army. About 100 were prepared for the Czech Army in 1947-1948. Another 150 are reported being prepared for shipment to Israel. Complete equipment for assembly of the weapon is said to remain at Pilsen with a capacity for five tank destroyers daily (peak wartime production was 140 monthly). Current rate of repair and assembly of these pieces is about three to four a week, or fifteen monthly.

(2) Modernization of T-34 Tanks: Eight old Soviet T-34 tanks were at the plant in 1948 undergoing modernization, probably for the Czech Army. It was planned that a total of 100 T-34 tanks would be reequipped according to following specifications; Engines - 240 HP, Weight - 45 tons, one half armed with 105 mm guns and the other half with 150 mm guns.

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(3) Light (12 ton) Tanks: It was reported in 1948 that Skoda-Pilsen would prepare seventy light tanks equipped with 88 mm guns, fifty for the Czech Army and twenty for Yugoslavia. It is not known whether these tanks were new or modified old types, but the Yugoslav portion of the order is believed to have been cancelled.

(4) Half-track Personnel Carriers: Approximately fifty of these vehicles were being rehabilitated weekly in February 1949, mainly for the Czech Army. The rate of production is believed to be only temporary and is the result of a drive to bring in all available vehicles of this type from collection points throughout the country to be used for supply of parts for newly assembled vehicles.

(5) Repair of Tank Engines for Soviet Zone of Germany: Old tank engines on hand at the Skoda plant are being repaired at a rapid rate by a section of the works employing 200 workers and working two shifts daily. These are stored until a considerable number have been collected and then shipped to the Soviet Zone of Germany.

(6) Development of New Tank Engine: Manufacture of tanks in Czechoslovakia is believed to be held up for lack of a satisfactory tank engine. Skoda engineers are reported to be conducting experiments with an air-cooled, Diesel engine to be employed in a new medium tank. The engine is said to consist of two flat 8-cylinder motor blocks (total 16 cylinders) mounted one on top of the other in a horizontal position. The engine power is to be 700 horsepower without blowers and 1,000 horsepower with blowers. In this respect, three US Sherman tanks are being used for testing the new engines. It is not believed that final plans for the new medium tank will be completed before the end of 1949, and production appears to be several years off.

(7) Manufacture of Tank Tracks for Soviet Army: An urgent order from the Soviet Army for 40,000 tank tracks has recently been completed, using manganese steel furnished by the Soviets.

b. Artillery and Mortars:

There has been little manufacture of new artillery weapons in the various Skoda plants since the end of World War II. However, in the field of testing weapons, developing prototypes, and repairing

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existing weapons, many reports indicate that the Skoda Works have been very active. The following tabulation lists all weapons which have been reported in the developmental or testing stages:

35 mm AA	85 mm AA
40 mm AA	100 mm Mortar
45 mm AT	100 mm gun
75 mm AA	150 mm railroad gun
83 mm AA	210 mm railroad and wheeled mounts

The calibers of weapons on order or in production at the Skoda Works are as follows:

37 mm	120 mm Mortar
75 mm	152 mm
82 mm Mortar	210 mm
105 mm	

The principal current activity is the manufacture for the Soviet Army of 210 mm guns for mounting on railroad carriage or wheeled mounts. Approximately fifty of these had been completed up to the end of 1948, and production is reported to be continuing at the rate of twenty every six months. Guns and ammunition for them are both produced at the Skoda-Pilsen plant. In addition to new production, and the development of prototypes of weapons listed above, the Pilsen plant has been engaged in repair of German weapons of which approximately 800 were overhauled in 1948, including 200 88 mm AA/AT guns.

A highly reliable source has reported that scheduled Skoda artillery production in 1949 under the first year of the Communist Five-Year Plan calls for 1,250 artillery pieces, including 420 75 mm pieces, 285 105 mm pieces, 480 152 mm pieces, and 60 210 mm pieces. It is believed that all weapons, with the exception of the 210 mm pieces, will be produced at the Dubnica Skoda plant which is being prepared for large-scale artillery production. In addition, the Skoda concern is scheduled to repair about 700 German 88 mm and 105 mm pieces in 1949.

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c. Ammunition and Explosive Devices:

The following types and quantities of artillery and mortar ammunition were reportedly manufactured by the Skoda Works in the 12 months ending in February 1949:

37 mm	30,000 rounds
75 mm	230,004 rounds
76 mm	138,018 rounds
82 mm Mortar	23,400 rounds
88 mm	on order
105 mm	on order
120 mm Mortar	117,000 rounds
122 mm	12,000 rounds
150 mm	22,434 rounds
152 mm	10,000 rounds
210 mm	740 rounds
300 mm	experimental

The bulk of the 582,000 rounds listed was produced at the Adamov Skoda plant which is the principal Skoda ammunition facility. Orders on hand from the Czech Army indicate that ammunition production is steadily increasing. The manufacture of a large quantity of 210 mm ammunition - to accompany the Soviet order for 210 mm guns - is presently under consideration and actual manufacture may already have been scheduled. The Soviets have been testing a 210 mm shell with an electrical fuze of an unknown type (possibly a proximity fuze) at Hlboke in Slovakia. The Adamov plant is planning to produce various calibers of shells using this fuze. In addition, the Skoda plant at Pilsen is reported developing new type land mines and hand grenades. The ammunition and explosive devices are filled at the Ziegleruv Dul shell filling plant.

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APPENDIX B

SKODA CAPACITY

Percentage of total capacity being used, and factors which currently limit production.

Skoda's estimated annual wartime capacity of 840 large-caliber tank guns and 2,400 various artillery pieces has been utilized only to a very minor degree since World War II and up to the present time. Even the program for 1949 which calls for production of 1,250 artillery pieces will utilize little more than one-third of wartime capacity. Of the three principal Skoda plants, only Adamov is expected to devote its entire current production to munitions in the next few months; currently 70 percent of its production consists of munitions. Most recent information on the Skoda concern indicates that a speed-up in the reestablishment and reconstruction of armaments facilities has been ordered. In view of the present heavy industry commitments of the company, it is felt that unless the international situation compels complete conversion to war production, it will not be possible for them to restrict to any further degree present production for civil consumption. Skoda's munitions production program for 1949 is not notably above its normal peacetime level, since it was mainly Skoda exports which made Czechoslovakia the world's third largest exporter of arms in the 1932-1937 period.

A number of factors place limitations on the production of munitions at the present time. Foremost among these are the Soviet demands on the Skoda concern for heavy industrial production coupled with the orders of the Satellites and for export to various other countries, which continues to occupy up to two-thirds of the capacity of the firm. A shortage of certain types of raw materials, particularly copper and ball bearings, has seriously impeded armaments production at Skoda. Shortages of iron and steel do not appear to have impeded arms production to any serious extent up to the present time, as steel can apparently be diverted from industrial production under the priority now given to the defense industry. Most gun and shell steel for the Skoda plants comes from the Vitkovice Steel Works at Morava Ostrava and the Poldina Hut at Chomutov. In addition, Soviet arms orders are reported to be accompanied by the raw materials required for their production. In the forthcoming expansion of artillery production, it is expected that shortages of high grade steel will become increasingly serious.

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Some dislocation of the industry has been apparent owing to the transfer of the armaments manufacturing equipment from the Pilsen works to the Adamov and Dubnica plants to the east. This move has been planned for some years to remove these vital facilities from their exposed position on Czechoslovakia's western border area to less vulnerable portions of Slovakia close to the Soviet Union. The move was initially scheduled for completion by the end of 1948 but has been delayed by the difficulties encountered in the reconstruction of the Dubnica plant which was heavily damaged during the war. At present, approximately 80 percent of the equipment has been moved. It has been reported that in order to get the 1949 program underway, the Pilsen plant is preparing to drill the gun tubes and ship them to Dubnica and Adamov for finishing and assembly.

Another factor which has served to restrict arms production has been the inability of Czech planners to make a final decision on the types to be manufactured. Prior to the Communist seizure of power, one group believed that future arms production should continue to be of Czech type weapons, while another believed that conversion to Soviet types of weapons should be made in view of the increasing ties between Czechoslovakia and the Soviet Union. Although no specific information is available on the subject at present, it is believed that current plans of the armaments industry call for conversion to some types of Soviet weapons and that such conversion could take place fairly rapidly at any time after 1 June 1949.

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APPENDIX C

DEPENDENCE OF SKODA ON SWEDISH IRON

The Skoda plants use an insignificant amount of Swedish iron ore. There are some blast furnaces in the industry which use Swedish ore directly, but most of the Swedish ore is first processed at Czech steel plants (Vitkovice, United, Poldina, Trinec, etc.) and the Skoda factories receive it in various forms of semi-finished or cast products.

For years, the Czech iron and steel industry has imported large quantities of Swedish iron ore, and the Czech blast furnaces were specially designed and constructed to use the high-grade Swedish ore blended with the low-grade ore mined in Czechoslovakia. If the supply of Swedish ore were cut off, production of Czech heavy industry would come almost to a standstill. Resumption of operations would require about two years.

Requirements of the Czech steel industry for iron ore in metric tons for the years 1948 and 1949 follow:

<u>Source</u>	<u>1948</u>	<u>1949</u>
Czech mined iron ore (@ 32% Fe content)	1,425,000	1,500,000 (estimated)
Swedish iron ore (@ 60% Fe content)	1,025,000	885,000
Soviet iron ore (@ 48% Fe content)	400,000	800,000
Total Czech iron ore requirements:	2,850,000	3,185,000 (estimated)

In the negotiations preceding the formal signing of the 1949 Swedish-Czecho Trade Agreement, Czechoslovakia attempted to increase the amount of Swedish ore imported to 1,300,000 metric tons, but the Swedes offered initially only 670,000 metric tons. When the final agreement was signed on 1 February 1949, valid until 31 January 1950, the amount of high-grade Swedish ore agreed upon was 885,000 metric tons. In partial compensation for the reduction in the amount of Swedish ore, the USSR plans to export 800,000 metric tons of iron ore to Czechoslovakia in 1949, exactly twice the amount shipped in 1948.

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The proportion of the total Czech semi-finished steel production used by the Skoda plants in 1948 is not known. However, iron ore actually supplied by Sweden (figures based on metal content of the ore) approximated fifty percent of all the pig produced in Czechoslovakia last year, even though total tonnage of ore shipped amounted to only thirty-six percent of total tonnage needs. Therefore, all the semi-finished and cast products used by Skoda munitions plants in 1948 also contained fifty percent metal originating from Swedish ore. Thus, if Swedish iron ore shipments to Czechoslovakia were stopped, the munitions industry production, like that of all Czech heavy industry, would be seriously curtailed, and production at the normal rate could not be resumed until the blast furnaces were modified to use the lower grade ore available domestically and from the USSR.

Czech industrial planners, aware of the possibility that the supply of Swedish ore might be reduced in the coming years, formulated plans during 1947-48 to construct blast furnaces in Slovakia, close to the iron mines, to utilize the low-grade Czech ores. They hope, eventually, to supply fifty percent of their total ore requirements from domestic sources and to supplement their needs with Soviet ore. Little progress has been made in realizing these plans.

At the present time, Czechoslovakia is still greatly dependent upon imports of iron ore from Sweden to maintain heavy industry at its present capacity.

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APPENDIX D

DEPENDENCE OF THE SWEDISH IRON INDUSTRY ON POLISH COAL

Estimated requirements of metallurgical coke for the Swedish iron industry in 1948 were 500,000 metric tons. Only 185,000 metric tons of coke were imported from Poland in 1948. (A total of 1,608,000 metric tons of coke were imported in 1948 of which nearly one million tons came from the Ruhr and Belgium; in 1949 Sweden expects to receive one million tons from the Bizone alone.)

Requirements of the Swedish iron industry for solid fuels other than metallurgical coke (and domestically produced charcoal) are not significant; in the production of steel, electric furnaces are largely used, and electricity is derived primarily from water power.

In the future, the Swedish iron industry expects to use a somewhat greater proportion of metallurgical coke, and less of charcoal, than is now the case.

It is concluded that the Swedish iron industry is currently dependent on Polish coal and coke to only a minor degree.